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Irrigation in Southern Alberta.
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Irrigation is just another word connected with the agriculture industry as far as most Albertans are concerned. But to southern Albertans irrigation is magic that has turned arid sections of the south into fertile green acres.

An important and prominent place in the Provincial economy is occupied by irrigation. It makes an area a permanent and stable agriculture section creating a natural food basket from which to supply the residents. Farming under irrigation supports 10 times as many people as does dry land farming on a comparable area.

A general program of expansion follows the irrigation ditches. The rural population is increased about ten fold requiring schools, churches, community centres, roads and other services. Thriving towns have developed in the irrigated districts because they become centres of distribution for prosperous rural areas. Without irrigation the city of Lethbridge still would be a small town but today it has a population of approximately 23,000 persons and her retail trade recorded for last year was $1,730 per capita. This is higher than the cities of Calgary and Edmonton and also is higher than the Dominion and Provincial averages.

The irrigated country of southern Alberta provides a good market for many articles produced at various centres throughout Alberta. This situation is good for the general economy of Alberta and it is important to the economy of Canada too. One example is the purchase of farm implements that are manufactured elsewhere in Canada.

Under dry land farming in southern Alberta, one family usually farmed several sections of land. Irrigation changed that picture completely and now there is one family to approximately every quarter section of land. In the Taber district there is one family to every 40 acres where the land is farmed very intensively. Dry land pasture in this section of Alberta required 40 acres per cow. With irrigation one acre of improved mixed pasture will carry up to two cows per acre.

Irrigation is provided for the southern portion of the Province because that is where it is needed. Before irrigation southern Alberta experienced many crop failures but through the use of water that type of plague has been wiped out. The irrigated country has an annual rainfall of 10-12 inches which makes crop production hazardous. The average rainfall throughout the remainder of the Province is 15-20 inches. Coupled with low rainfall, in the south, is a high rate of evaporation caused by high winds and the lack of trees. Incidentally, because of irrigation trees now appear in sections of the south.

The results of irrigation can not be achieved overnight. The accomplishments recorded by irrigation in Alberta follow 50 years of planning and hard work by farmers, government employees and private company employees. Surveys had to be made and plans developed. Then long periods of negotiations were required before projects could be started. The first surveys for the St. Mary-Milk Rivers Development were started in 1914 and it is only now nearing the final stages of completion.

The Provincial and Federal governments are teaming up in a multi-million dollar irrigation expansion program designed to stabilize farming in southern Alberta.

Under construction is the St. Mary-Milk River Development scheme which was originally estimated to cost about $15,000,000 but that figure has been approximately doubled. The big project which gets its water from four international streams will serve a huge area stretching from southwest of Lethbridge to a district just a few miles from Medicine Hat. While running through the miles and miles of ditches the water will supply an additional 450,000 acres of thirsty dry land throughout the region.

Alberta's 13 existing irrigation districts have created an irrigable area of 812,000 acres. Recent figures show that 485,472 of these acres are actually irrigated which leaves room for considerable irrigated agriculture activity within the established districts. The S.M.R.D. will service 10,600 acres this year in the Big Bend

district northeast of Taber. Additional acres will be brought under the ditch each year until the program is completed about 1956.

During the past year the Provincial government has authorized an expenditure of $2,500,000 for the St. Mary-Milk Rivers Development and it is expected that $3,000,000 will be spent this year. To date the Federal government has spent about $6,000,000. However, when the scheme has been completed both governments will have spent about an equal amount.

The key structure on the project is the St. Mary dam which was begun during the 1946 construction year and has just been completed. The completed development will consist of 12 reservoirs, connected by canals, strategically located throughout the project. This will form the main framework for the project from which distributary systems will branch out to carry water to each parcel of land to be irrigated.

The St. Mary Dam, the largest earthen dam ever built in Canada rises 202.5 feet above the lowest point of its foundation in the river bed. The crest of the dam is 2,536 feet and it is 1,480 feet wide at the base. The St. Mary Reservoir will store the diverted waters of the Belly, Waterton and the St. Mary Rivers. The reservoir will be 17 miles long and its greatest width will be six miles. This man-made lake will be 175 feet deep at the dam with a storage capacity of 320,000 acre feet and 285,000 acre feet of that total will be live storage available for irrigation.

A 2,500-foot horseshow-shaped irrigation tunnel blasted through solid rock will carry the water from the St. Mary Reservoir into the remainder of the system. From the irrigation tunnel the water flows for half a mile down a coulee and then enters the main canal. The Federal government is building a $1,000,000 spillway at the Dam and it will build another large dam on the Waterton River in another step planned for the S.M.R.D.

All the engineering work for the entire project is the responsibility of the Federal government. Specifically the senior government either has built or will build the St. Mary Dam and its required adjacent structures, St. Mary Reservoir, the Ridge Reservoir

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and the canals connecting them. The Canadian government proposes to build a reservoir at Waterton River below Waterton Lake in order to divert water across to the Belly River and pick up more water there to take across to the St. Mary Reservoir.

The Provincial government is responsible for construction of the main canal from Ridge Reservoir to Chin Reservoir, then from Chin east a lateral low line canal and high line canal. The low line canal will serve the additional area east of the Taber Irrigation District and to lands in the districts of Fincastle, Grassy Lake, Berdet, Bow Island, Winnifred, Seven Persons and Medicine Hat. The high line canal will serve the territory south of the low line district. In addition the Province will build a canal east from Ridge Reservoir to serve an additional area east of Craddock, New Dayton, Warner and Milk River. During 1950 the Alberta Government contracted for construction of 84 miles of main supply canals. During the past year also the Provincial government sponsored construction of the distribution system in the Big Bend and Fincastle districts. A few years ago Alberta sponsored construction of the East Pothole Dam (Jensen Dam).

Irrigation officials and pioneers have expressed the opinion that farmers cannot and should not be expected to retire the capital cost of construction for the systems. They base this opinion on the fact that great benefits are derived from secondary industries developed from agriculture.

It is estimated that the St. Mary-Milk Rivers Development will cost about $75 per irrigated acre. The dominion government is contributing its share of the cost without any provision for refund of the capital outlay. The provincial government will charge $10 per irrigated acre for the water right and a refund for part of the capital cost. This can be cash or spread over crop payments of 10 years. The balance of the capital cost will not be refunded. This is an exceptionally low charge for the water rate. In addition the farmer pays an annual assessment rate per acre of irrigable land.

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The industrial developments resulting from irrigation are contributing very substantially to the general welfare of southern Alberta and to the province as a whole. As oil has provided the shot in the arm required to encourage industrial development in central Alberta irrigation is the driving force behind southern Alberta's industrial expansion.

One of the important developments in the south is the rapid growth of the sugar beet industry. All production records for this industry were broken during 1950. Approximately 445,000 tons of sugar beets were grown this year and the estimated gross value is $7,000,000. A new $5,000,000 sugar beet refinery was opened last fall at Taber giving the province three such plants. The others are at Raymond and Picture Butte. A reflection of the future trend of this industry is the fact that during November the Alberta Sugar Beet Growers Association made a request for about 250 families to work in the sugar beet fields this spring and summer.

Officials have estimated the value of crops grown in the 13 irrigated districts to be $26,627,566 for 1950. Another industry which has become big business because of irrigation is the vegetable canning industry. There are plants located at Lethbridge, Brooks, Magrath and Taber, canning such products as peas, corn, pumpkin, carrots, beets, squash, spinach and cauliflower. Some pickling is done also. Because of increased activity in this industry it is possible that the irrigation districts soon will require a plant to manufacture cans. Processing of frozen foods has become a large business in southern Alberta. About 95 percent of all frozen peas produced in Canada are processed at Lethbridge. Sixty percent of all frozen vegetables produced in Canada are processed there.

Irrigation has developed a large program of livestock finishing to supply the meat trade with the choice carcasses. Alberta ranches are supplying the best of cattle and sheep for this purpose. Finishing of livestock establishes profitable

winter employment. The irrigated areas supply all the feeds for finishing and in turn become more productive by returning manure to the soil.

One of the greatest prospects for further development of the canning industry in southern Alberta is the development last year of what is believed to be a commercial tomato. The tomato has passed its canning trials. Because of this development businessmen are predicting new and expanded industrial activity for the district.

The St. Mary-Milk Rivers Development will open up a new era of opportunities and will support many more persons.

One of the major responsibilities of the Alberta government is the colonization of the adjacent lands when the project is constructed. In addition to being manager of the S.M.R.D., P. M. Sauder, recently was appointed colonization manager. Preference will be given first to veterans of the Second Great War and then to the resettlement of farmers on submarginal lands.

Crown lands and tax recovered lands will be available for settling and the latter will be purchased from the municipalities. It is expected the established farmers will have more land than they desire to cultivate under irrigation. Therefore, the colonization manager will assist the farmers to obtain suitable purchasers. Listings of privately owned land available for sale will be encouraged by the colonization manager in order to service prospective settlers.

A large portion of the land in the S.M.R.D. has been cultivated, contains good soil fertility, and in wet years has produced good crops. The entire area is tributary to Lethbridge and Medicine Hat which provide good schools, churches, and business establishments. In addition there are many smaller towns which will expand. Good highways within the project make the towns easily accessible.

Europeans and Japanese who have been working in the sugar beet fields now have money saved, and farmers' sons and

relatives who have assisted with farm operations and shared the profits of the last few years, have money to buy irrigated land.

Present owners throughout the project plan to farm larger irrigated areas than are customary. It was formerly believed that 80 acres was the maximum a farmer would desire under irrigation but experience shows most farmers want a half section. In order to farm this amount of irrigated land a second family is needed to assist with the work.

During the past year the Alberta government appointed an irrigation assistant who will help the farmers utilize the water after it reaches his land. The irrigation assistant will survey the settlers land to determine the high and low areas. He will help plan the ditches and levelling of the land to provide more efficient irrigation. The land should have a uniform slope to assure the maximum use of available water.

The Provincial Department of Agriculture, will assist these individual land levelling projects.

The Alberta Government has been actively supporting the expansion and development of irrigation for 30 years.

Irrigation was started on a large scale in southern Alberta in 1895- the Alberta Railway and Irrigation project. The main works of the project were completed by the spring of 1901 and irrigation provided for about 60,000 acres of land near Lethbridge and about 3,000 acres in the Magrath district.

Four international streams, the St. Mary, Milk, Belly and Waterton Rivers, are all involved in the plans of the St. Mary-Milk Rivers Development. To complete present plans Alberta requires her present share of the St. Mary-Milk Rivers and all of the supply of the other two streams. Under an agreement brought about by the International Joint Commission on Boundary Waters between the United States and Canada in 1909 - both countries were given half of the combined flow of the St. Mary and Milk Rivers. Distribution of the water flow from the Waterton and Belly Rivers has not been negotiated yet. If Alberta does not get all the water from these rivers the S.M.R.D. project will have to be curtailed slightly.

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Surveys now are being made for irrigation projects which would draw water from the Red Deer and South Saskatchewan rivers. Because these streams concern the three prairie provinces conferences regarding water distribution started recently and a long period of negotiation is expected before any agreements will be signed.

It was about 1920 that the Provincial government started backing the bonds of the private irrigation companies in order to assure construction of projects. When plans for the present St. Mary-Milk Rivers Development were first being considered, almost 37 years ago, the system was operated by the C.P.R. as the Alberta Railway and Irrigation System.

When it seemed apparent that the railway company was not interested in any further irrigation development the Federal and Provincial governments became very concerned with the use of the water from the four rivers. It was realized that if Canada and Alberta didn't use the water the Dominion and the Province would lose their share of the water crossing the border. On behalf of the Province, P.M. Sauder, manager of the S.M.R.D. was commissioned to approach the C.P.R. and arrange taking over the system. Following several months of negotiations an agreement between the C.P.R., A.R. and I., and the Province was signed and the system transferred to the Provincial government in 1946. A crown corporation was established to maintain and operate the system.

The C.P.R. paid the St. Mary-Milk Rivers Development Crown Corporation $100,000 to provide funds for maintenance of the project that existed at that time. The crown corporation was operated without any financial assistance from the government. It derives its funds for maintenance from water rates paid by the farmers.

Six months ago the Federal and Provincial governments signed an S.M.R.D. agreement which assured the development of this important project. Following are some of the highlights of that agreement.

Alberta agreed to issue Canada such licenses and to transfer to Canada such water rights to divert or take sufficient water from the St. Mary, Waterton, or Belly rivers and their tributaries as may be required for the full development of lands irrigable within or through the project.

Canada agreed to construct and pay for construction of all dams, reservoirs and connecting canals in the project from the Waterton River to the Ridge Reservoir, and all other works belonging to such dams, reservoirs and connecting canals. Canada agreed also to maintain and operate these works; and to deliver water to Alberta at cost provided such charge shall not exceed 25 cents per acre foot per year. Alberta and Canada agreed that this latter clause be reviewed every five years.

Alberta agreed to make available to Canada any Crown lands owned by Alberta that then or thereafter are required for the site or right-of-way for the structures mentioned in the preceding paragraph. Canada is to pay for any lands required. Alberta will make lands available under similar agreement for any enlargement or alteration of Canada's structures.

Alberta agreed to assume responsibility for construction, operation, and maintenance of all dams, reservoirs, canals, distributaries and other works that are required for the conveyance and distribution of water to all irrigable lands below the Ridge Reservoir.

Alberta agreed that upon completion of the dams, reservoirs, main connecting canals and other works built by Canada that the Province will have formed and will be ready to carry out its program for the establishment of settlers on the irrigable lands adjacent to the project.

Canada agreed to complete all surveys, engineering designs and cost estimates required for the construction of the project and to furnish all engineering, legal services and supervision incidental to the construction of the project and to file all such plans with the appropriate Land Titles Office and with the Water Resources Office.

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